From the 'Transc

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[Interview with Dr J. C. Warren on the work of Lord Lister]

PROBABLY no American surgeon is better qualified than Dr. J. Collins Warren to speak with authority on the work of the late Lord Lister. Besides his own high position as a surgeon, Dr. Warren has the peculiar advantage of personal familiarity both with the old surgery of pre-antiseptic days, and with the new surgery which was made possible by Lister's antiseptic methods. He was acquainted with the surgeons and the hospitals of Boston when the use of ether anaesthesia led to a great and disastrous increase in the number of surgical operations in the years just preceding the invention of antisepsis. As a student in the great hospitals of Europe for the three years, 1866-69, Dr. Warren saw the best and worst of the old surgery on the Continent; and at the end of his period of study he made the acquaintance of Lister, accepted the new principle, and was one of the first surgeons in America to put it into practice. In the following interview Dr. Warren sketches for Transcript readers the old, discouraging conditions of surgery, and the processes by which the transition to the aseptic surgery of today was accomplished.

To appreciate Lister's work, said Dr. Warren, one must have been familiar with the condition of surgery before the introduction of antiseptic treatment. My earliest surgical experience belonged to an era which has happily passed away — the dark ages of surgery. It was owing to the fact that my father was a surgeon that I early made acquaintance with the profession and with affairs of medicine, and from the time I was a school-boy through my years as an undergraduate at college I frequently saw operations performed at the Massachusetts General Hospital.

Surgical and hospital conditions at this period — the later fifties and early sixties — had been greatly changed from their earlier attitude by the results of the discovery of ether anaesthesia. When ether was first made use of for surgical anaesthesia, few of the cases entering the Massachusetts General gave an opportunity for the use of the new agent. At that time serious operations were undertaken only in cases of dire necessity, or when the patient was particularly strong — what the surgeon would call "a good surgical risk." But with the fear of the immediate pain of operation dispelled by the promise of ether, the number of surgical patients increased very rapidly within a few years.

Little important advance was made during these years in surgery itself, the main improvements being in the direction of preserving more of the patient's body to serve him after operation: an instance was the resection of joints, which might give a patient a leg stiff from the hip down, where by the earlier practice there would have been amputation at the knee. No progress had been made in the art of dressing wounds, or, except as just noted, in the technic of operative surgery: the methods in use were essentially those of the Napoleonic wars. Some advances in the hygiene of hospitals were made during the Civil War, but with few exceptions, surgery went on as before.

Before the Days of Asepsis

In consequence of the great increase in the number of surgical patients, and of the stagnation of surgery itself, the conditions in our civil hospitals began to resemble those in a great military camp. Wards were crowded with patients, and the disease known as "hospital pest" prevailed to an extent hitherto seen only in war times, or in the old days of the Hotel Dieu and other great Continental hospitals of the eighteenth century. In the early sixties conditions at the Massachusetts General Hospital became almost unbearable. Besides pyemia and erysipelas, which came in epidemics, there was an especially severe epidemic of hospital gangrene, and the mortality from this was so high that the hospital had to be closed for a time. The conditions at this time approached, so far as mortality was concerned, those of the military hospitals which the Civil War was then crowding with injured soldiers. Surgery had become filled with the gravest responsibilities. I can well recall how, when I was an interne at the hospital, my father asked me about a patient from whose breast he had removed a tumor about a week before; and now, when I told him the patient was dead, he said with an air of great depression: "I am sometimes almost disgusted with surgery." That was almost the only attitude possible for a sensitive man, in view of the conditions.

That the same state of affairs existed in European hospitals I discovered during my period of study in Europe, covering three years, from 1866 to 1869. Under the great surgeon Billroth, I found the great hospital at Vienna with a steady population of about two thousand patients. Billroth was a bold operator, who never hesitated at any risk. At that time the old hospital at Vienna was the hospital centre of the

dent fresh from the laboratories of Germany and France an appreciation of the studies and problems in which he was then engaged. "Dr. Warren," he said to me, "I do not expect my contemporaries to accept my doctrines, but I look to your generation and to the men of a coming age to carry them out."

Lister had to contend with much criticism and rivalry from his contemporaries, who depreciated his work, or tried to show that his system had no merit or novelty. All this he bore with the great patience native to a man of his simplicity of character. It was to Pasteur that Lister was indebted for the basis of his conception of antisepsis. The bacillus of anthrax had been demonstrated by Davaine, in France, as early as 1850; but while the association of microörganisms with some diseases was recognized, it was supposed that a disease might begin out of nothing, and that the associated organisms might arise by spontaneous generation. Pasteur, the chemist, working on problems connected with the manufacture of beer, laid the foundations of bacteriology in his memoirs of 1858 on "the preservation of watery solutions of decomposable substances." He showed that if air were excluded from a decomposable solution, decomposition would not occur. Lister accepted, for many years, the assumption that the microörganisms which caused infection of surgical wounds were derived solely from the air. His contribution to science was the idea of treating the surfaces of a wound with a substance which would destroy the organisms deposited there from the air, and excluding air so far as possible from the disinfected wound. Lister had used carbolic acid as early as 1863 or 1864, as a caustic; but his antiseptic theory was not announced until the publication of a series of papers in the Lancet, beginning March 16, 1867.

Lister's Crude Early Methods

By contrast with present-day practice, Lister's procedure was curious enough, its crudity being inevitable in view of the imperfect knowledge of bacteria. His first method was to wash the surfaces of the wound with a one-to-twenty solution of carbolic acid, in order to destroy the germs of putrescence; and then to cover the line of the wound, or the surface, as the case might be, with lint impregnated with carbolic acid; outside of the lint was placed a thin sheet of metal. For opening abscesses he directed the use of a small square of rag which had been dipped in a solution consisting of one part of crystallized carbolic acid to four parts of boiled linseed oil. This rag was laid over the site of the incision to be made. One edge of the rag being raised for the purpose, the cut was then made with a knife dipped in the same carbolized oil, and the rag dropped back again as an antiseptic curtain from beneath which the pus flowed out of the abscess.

Crude as this procedure now appears, it was effective, for Lister records in August, 1867, that for nine months he had had no cases of erysipelas, pyemia, or hospital gangrene in his wards.

For the dressing of open wounds Lister devised a putty charged with carbolic acid, a thin sheet of the putty being laid directly on the surface of the flesh.

When I visited him, Lister had substituted for the carbolated putty a new dressing which consisted of a sort of rough plaster made of carbolized shellac laid on cloth. By warming the plaster by holding it against a hot tea-kettle the shellac came loose, and was to be laid over the surface of the wound. I bought some of these preparations of plaster and brought them home with me in large tin cylinders so as to have them in the shape used by Lister.

Carrying Lister's Ideas to America

After returning to Boston I offered to use some of these dressings in the Massachusetts General Hospital, but I was coldly informed that the carbolic acid treatment had been discarded. This episode, which concluded a long period of study in European centres, seemed to me a rather startling close. Here was a student, myself, who had had every opportunity of acquiring the knowledge of the day. About to return, and complacently regarding himself as an epitome of all that was newest and latest in modern surgery, this student had been obliged to cast aside suddenly all his previous points of view and begin all over again. It was the end of an old era and the beginning of a new one, which, as Lister had predicted, it would take nearly a generation to work out.

The development of antiseptic surgery was slow, laborious and uncertain. Lister's methods were tried in both the Boston hospitals, but for most of a decade they were looked at sceptically by the older surgeons of the city, who at that time controlled the surgical field much more closely than now. Everyone had his own way of treating wounds, though the antiseptic idea was the common basis. In general, the English methods prevailed. Much better procedures were in use on the Continent, where the notion of personal cleanliness as a surgical measure got an early start. The old surgeons were so far from clean in their habits and persons that any improvement in that regard was greatly for the better.

Light from the Bacteriologists

The attention of the scientific world was soon concentrated on the problem of infection by microorganisms. Pasteur's methods were those of a pioneer, unsuited to the minute exploration of the new territory. He used liquid media—beef broths—from which the different germs could not be separated for particular study. The

Germans, with their usual painstaking thoroughness, bent all their energies to the solution of this problem of separating the different kinds of germs. Among the few great men who emerged from this new investigation, Robert Koch set the science of bacteriology on a new foundation by using a solid culture medium, beef gelatine, which enabled the bacteriologist to separate the species of bacteria, and study each species effectively.

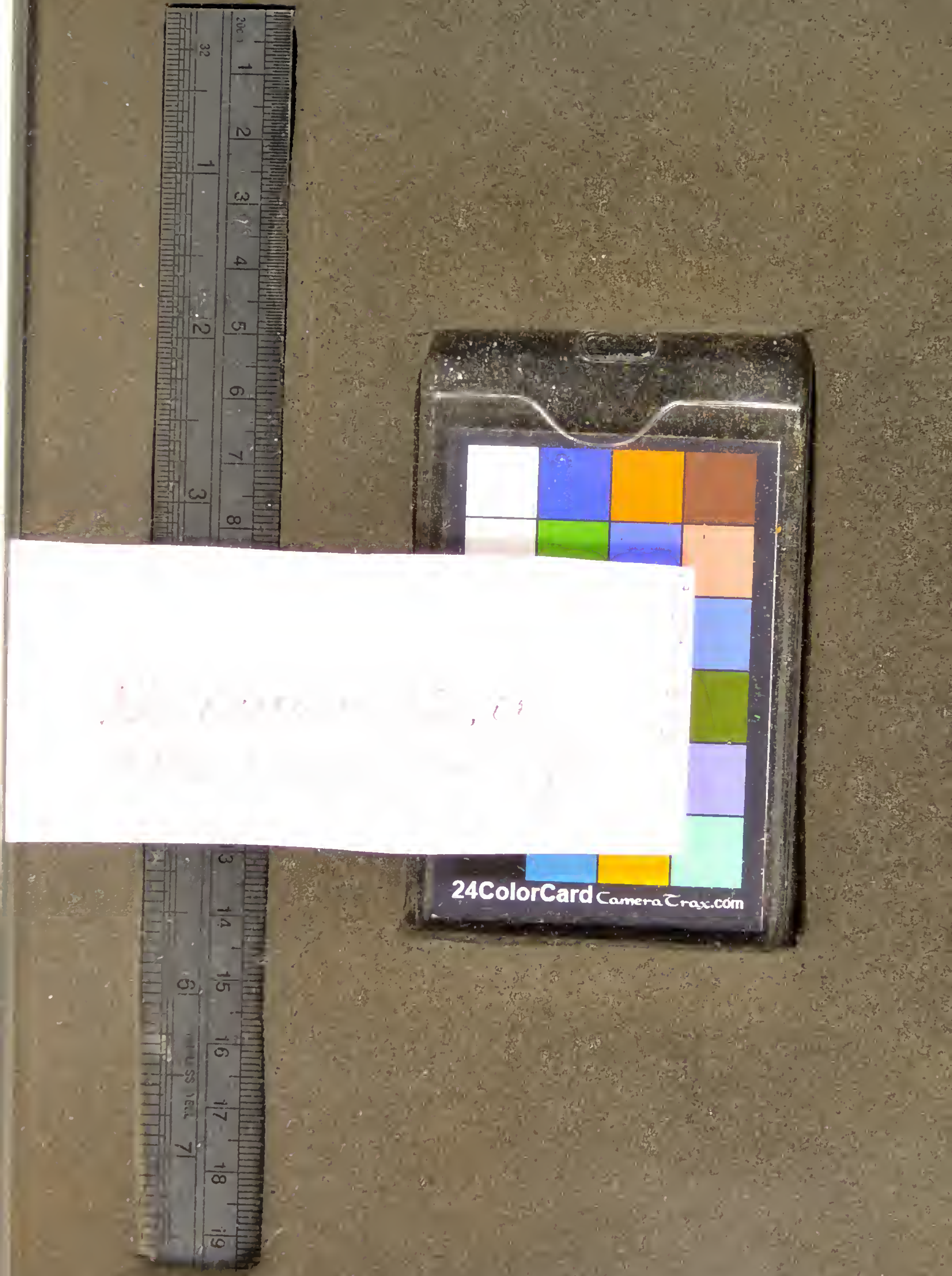
This advance came about ten years after the beginning of the antiseptic era. Meanwhile the English surgeons had been plodding on conservatively, as is their habit, making slow but steady progress in their methods of dressing wounds. But the great advance was made by the Germans, who saw that the air was not the only source of wound infection, and who realized that under the old régime every surgical operation was a bacteriological experiment. Cleanliness on the part of the surgeon was at last recognized in its true importance, and the era of soap and scrubbing brushes came in. Lister had early devised a spray of carbolic solution for the purpose of disinfecting the air above a wound, both at operation, and when dressings were changed; and he continued the use of this spray until 1887. The Germans had brought in before that year the rule of scrubbing. With that, the antiseptic era closed, and the aseptic era began. The English surgeons, however, have not fully adopted the aseptic practice, and to this day many of them still adhere to antiseptic dressing in preference to aseptic.

It was from Professor Ernst, one of the pioneers of bacteriology in this country, that I first got an appreciation of the advantages of using dressings that were absolutely free from living bacteria. Dr. Ernst asserted, quite accurately, that surgery called for the same precautions as bacteriology, and he proceeded to construct an appliance for sterilizing surgical dressings. I made use of this appliance during the following winter in my service at the hospital. The next winter, when I went on duty again, the apparatus had disappeared, and not one of my assistants knew how sterile dressings were prepared. Thus the Massachusetts General, which is inseparably connected with the first use of ether anæsthesia, probably lost the chance of being the first hospital in the world to use aseptic surgery.

It may be pertinent here to quote from a recent issue of the London Times this announcement:

A LIFE OF LORD LISTER

It is in contemplation that a life of Lord Lister should be prepared. Any letters of scientific interest, forwarded to Mr. R. J. Godlee, 19 Wimpole street, London, W., will be gratefully received, and returned after copying, if desired.



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